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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR   | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|------------------------|---------------------|------------------|
| 10/578,421   | 05/05/2006  | Ki Ju Kang             | P/4761-4            | 1653             |
| 2352 7590 02/17/2010<br>OSTROLENK FABER GERB & SOFFEN<br>1180 AVENUE OF THE AMERICAS<br>NEW YORK, NY 100368403 |             |                        |                     |                  |
| EXAMINER<br>KENNY, DANIEL J  |             |                        |                     |                  |
| ART UNIT<br>3633   |             | PAPER NUMBER           |                     |                  |
| MAIL DATE<br>02/17/2010  |             | DELIVERY MODE<br>PAPER |                     |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/578,421

**Applicant(s)**

KANG ET AL.

**Examiner**

DANIEL KENNY

**Art Unit**

3633

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5, 7-13, 15 and 16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-13, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 5 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission has been entered.

### ***Drawings***

Figures 1-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. In addition, Figures 1-3, 5, and 10-12 should be labeled, for example, Figs. 1a, Fig. 1b, etc. because there is more than one drawing per figure number.

See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 and 9 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims recite that the wire members need not be bonded at intersection points. The written specification and drawings do not disclose that the wire members need not be bonded at intersection points. The specification sections cited as support simply disclose intercrossing wires forming a cellular light structure unit cell. In addition, essentially the only discussion of the intersection points (the abstract and page 7, lines 16-18) discloses that "the wires may be preferably bonded..."

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**Claims 1-6, 8, and 16 - are rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson (6,739,937) in view of Barlow (4,271,628).**

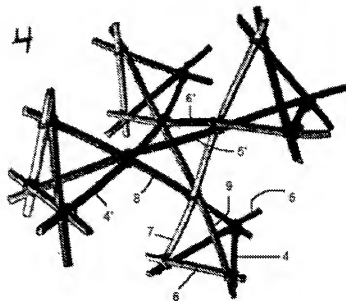
Snelson discloses a structure (Fig. 4 below) comprising:

*Claim 1 - a)* a first tetrahedron member formed of a first to sixth wires, the first tetrahedron member being constructed in such a manner that the first wire (4), the second wire (5), and the third wire (6) are intercrossed in a plane to form a triangle, the fourth wire (7) is intercrossed with the intersection point of the second wire and the third wire, the fifth wire (8) is intercrossed with the intersection point of the first wire and the second wire, and the sixth wire is intercrossed with the intersection point of the third wire and the first wire, the fourth wire, the fifth wire, and the sixth wire (9) being intercrossed with one another at a single reference intersection point; and

b) a second tetrahedron member contacted with the first tetrahedron member at the reference intersection point and having a similar shape to the first tetrahedron member, the second tetrahedron member being constructed in such a manner that the fourth wire, the fifth wire, and the sixth wire pass the reference intersection point and extend further, each of a group of wires (4', 5', 6') is intercrossed with two wires selected from the extended fourth, fifth and sixth wires, the group of wires being in parallel with the first wire, the second wire, and the third wire respectively; and

and the unit cell is repeated in a three-dimensional pattern, thereby forming a wire (or rod)-woven truss-type structure.

Finally, the Snelson-taught wire members need not be bonded at intersection points ("joining members are not required", para. 36, last sentence).



Annotated Fig. 4 (6,739,937)

Barlow discloses that it is old in the art to form regular tetrahedron structures, wherein the forming elements are intercrossed with each other at 60 degrees or 120 degrees, and the unit cell is repeated in a three-dimensional pattern, thereby forming a truss-type structure.

It would have been obvious to one of ordinary skill in the art at the time the present invention was made to include the regular tetrahedron structures taught by Barlow to form "complex geometrical structures" (col. 1, line 26), which helps achieve the Snelson goal of forming "more challenging" three dimensional space frame objects.

Claim 2 - Among the six groups of orientational wires, three groups of orientational wires forming a vertex of the first or second regular tetrahedron member are intercrossed clockwise or counterclockwise when seen from the front of the vertex.

Claims 3 and 4 – The Barlow first and second regular tetrahedron members have a similarity ratio of 1:1. (Fig. 20 - 6)

Claim 5 – The wires are any one selected from the group consisting of metal, ceramics, synthetic resin, and fiber-reinforced synthetic resin.

Claim 6 - The intersection point of the wires is bonded by any one selected from the group consisting of a liquid- or spray-form adhesive, brazing, soldering, and welding.

Claims 8 and 16 – The claims are rejected, as they depend from rejected claim 1.

**Claim 7- is rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson in view of Barlow and in further view of Constantinesco (2,677,955).**

Constantinesco discloses that it is old in the art to manufacture a reinforced composite material manufactured by filling with a resin, the empty space of a three-dimensional wire cellular light structure. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to manufacture a reinforced composite material manufactured by filling with a resin, the empty space of a three-

dimensional wire cellular light structure as taught by Constantinesco using the claim 1 three-dimensional wire-woven cellular light structure of Snelson to have "a final product that, after setting and hardening, is a new material with an increased resistance to compression" (col. 3, line 20), such a permanent final product being "for display" (col. 1, line 63).

**Claim 9-15 – are rejected under 35 U.S.C. 103(a) as being unpatentable over Snelson in view of Barlow and in further view of Constantinesco.**

Claim 9-15 are an obvious method of using the device(s) of the above claims.

***Response to Arguments***

Applicant's arguments have been fully considered but they are not persuasive.

The argument is made that the present inventive cellular light structure gains significant strength from "the lengths of the sides of the unit cell in the cellular structure of the present invention" being "equal and the lengths of all truss elements are equal", and "If the lengths of the truss elements are not necessarily equal (as per Snelson or Barlow), the cellular structure will not exhibit superior strength" However, not only does the specification or arguments not provide insight as to why this strength is so gained, the wire lengths between intersection points is disclosed as being different (page 13, line 5).

Regarding the limitation that the wire members need not be bonded at intersection points, as shown in the rejection above, the Snelson-taught wire members

need not be bonded at intersection points. Such un-bonded intersection points potentially results in a weaker structure, but a similar decrease in strength will occur in the present invention with no bonding versus the preferred bonded intersection points, so there is apparently little difference regarding this limitation (see also, the argument that "as Constantinesco teaches a means of fixing or bonding a structure throughout a structure's volume, Constantinesco also at least implicitly reinforces the notion that structures of the prior art require some form of bonding or reinforcement between support members as a way to maintain the strength, stability and integrity of the overall structure"). A similar relationship apparently exists between a light structure having regular geometric unit cells versus cells not necessarily having regular geometric cells with similar length wire segments between joints. i.e., a regular geometric form is stronger, which is apparently taught in the prior art of at least Kagome.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL KENNY whose telephone number is (571)272-9951. The examiner can normally be reached on Mon-Fri. 8:00-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Dunn can be reached on (571) 272-6670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. K./  
Examiner, Art Unit 3633

/Jeanette E Chapman/  
Primary Examiner, Art Unit 3633